BRITISH STANDARD

BS EN
12390-8:2009

# Testing hardened concrete

## Part 8: Depth of penetration of water under pressure

ICS 91.100.30,



BSI
British Standards

# National foreword

This British Standard is the UK implementation of EN 12390-8:2009. It supersedes BS EN 12390-8:2000 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/517/1, Concrete production and testing.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2009



**ISBN 978 0 580 58800 6**

**Amendments/corrigenda issued since publication**

| Date | Comments |
|---|---|
| | |
| | |
| | |
| | |

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 12390-8

February 2009

ICS 91.100.30

Supersedes EN 12390-8:2000

English Version

# Testing hardened concrete - Part 8: Depth of penetration of water under pressure

Essai pour béton durci - Partie 8: Profondeur de pénétration d'eau sous pression

Prüfung von Festbeton - Teil 8: Wassereindringtiefe unter Druck

This European Standard was approved by CEN on 27 December 2008.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: Avenue Marnix 17, B-1000 Brussels**



Ref. No. EN 12390-8:2009: E

# Contents

Page

# Foreword

This document (EN 12390-8:2009) has been prepared by Technical Committee CEN/TC 104 “Concrete and related products”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2009, and conflicting national standards shall be withdrawn at the latest by August 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12390-8:2000.

The standard has been restricted to tests on specimens cured in water.

This standard is one of a series concerned with testing concrete.

The series EN 12390 includes the following parts:

EN 12390 Testing hardened concrete –

Part 1: Shape, dimensions and other requirements for specimens and moulds;

Part 2: Making and curing specimens for strength tests;

Part 3: Compressive strength of test specimens;

Part 4: Compressive strength - Specification for testing machines;

Part 5: Flexural strength of test specimens;

Part 6: Tensile splitting strength of test specimens;

Part 7: Density of hardened concrete;

Part 8: Depth of penetration of water under pressure.

The following amendments have been made to the 2000-10 edition of this standard:

— editorial revision

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

# 1 Scope

This European Standard specifies a method for determining the depth of penetration of water under pressure in hardened concrete which has been water cured.

# 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12390-2, *Testing hardened concrete – Part 2: Making and curing specimens for strength tests*

# 3 Principle

Water is applied under pressure to the surface of hardened concrete. The specimen is then split and the depth of penetration of the waterfront is measured.

# 4 Apparatus

## 4.1 Testing equipment

The test specimen, of given dimensions, shall be placed in any suitable equipment in such a manner that the water pressure can act on the test area and the pressure applied can be continuously indicated. An example of a test arrangement is shown in Figure 1.

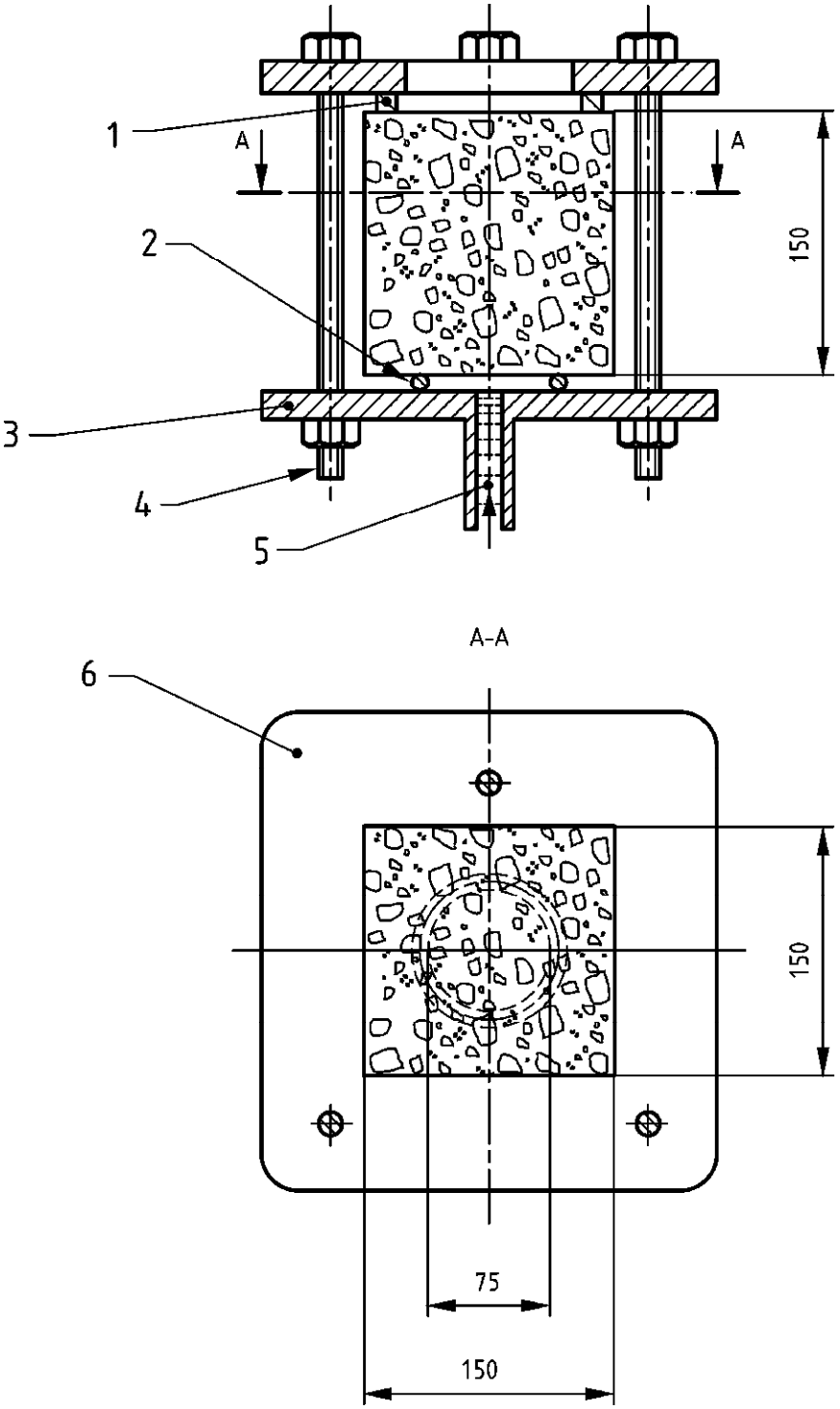
NOTE 1 It is preferable that the apparatus should allow the other surfaces of the test specimen to be observed.

NOTE 2 The water pressure may be applied to the surface of the test specimen either from the bottom, or the top.

A watertight seal shall be provided, made of rubber or other similar material.

The dimensions of a test area shall be approximately half of the length of the edge or diameter of the test surface.

Dimensions in milimetres




**Key**

1 Packing piece
2 Sealing ring
3 Screwed on plate
4 Screw-threaded rod
5 Water under pressure
6 Screwed on plate

**Figure 1 — Example of test arrangement**

# 5 Specimen

The specimen shall be cubic, cylindrical or prismatic with the minimum dimension of the surface of the specimen to be tested not less than 150 mm and no other dimension less than 100 mm.

# 6 Procedure

## 6.1 Preparation of the test specimen

Immediately after the specimen is de-moulded, roughen the surface to be exposed to water pressure, with a wire brush and cure the specimen under water in accordance with the procedures given in EN 12390-2.

## 6.2 Application of water pressure

The test shall be started when the specimen is at least 28 days old. Do not apply the water pressure to a trowelled surface of a specimen. Place the specimen in the apparatus and apply a water pressure of (500 ± 50) kPa for (72 ± 2) h. During the test, periodically observe the appearance of the surfaces of the test specimen not exposed to the water pressure to note the presence of water. If leakage is observed then consider the validity of the result and record the fact.

NOTE The use of tap water is satisfactory.

## 6.3 Examination of specimen

After the pressure has been applied for the specified time, remove the specimen from the apparatus. Wipe the face on which the water pressure was applied to remove excess water. Split the specimen in half, perpendicularly to the face on which the water pressure was applied. When splitting the specimen, and during the examination, place the face of the specimen exposed to the water pressure on the bottom. As soon as the split face has dried to such an extent that the water penetration front can be clearly seen, mark the water front on the specimen. Measure the maximum depth of penetration under the test area and record it to the nearest mm.

# 7 Test result

The maximum depth of penetration, expressed in mm, is the test result.

# 8 Test report

The report shall include:

a) identification of the test specimen;

b) date of start of the test;

c) description of the specimen (shape and dimensions);

d) direction of application of water pressure with respect to the casting direction;

e) maximum depth of penetration, in mm;

f) any leakage and consideration of the validity of the result; (if appropriate)

g) any deviation from the standard test method;

h) a declaration by the person technically responsible for the test that it was carried out in accordance with this document, except as noted in item g).

## 9 Precision

There is no precision data available.

# BSI - British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

**Revisions**

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

**Buying standards**

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001. Fax: +44 (0)20 8996 7001 Email: orders@bsigroup.com You may also buy directly using a debit/credit card from the BSI Shop on the Website http://www.bsigroup.com/shop

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

**Information on standards**

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact Information Centre. Tel: +44 (0)20 8996 7111 Fax: +44 (0)20 8996 7048 Email: info@bsigroup.com

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: +44 (0)20 8996 7002 Fax: +44 (0)20 8996 7001 Email: membership@bsigroup.com

Information regarding online access to British Standards via British Standards Online can be found at http://www.bsigroup.com/BSOL

Further information about BSI is available on the BSI website at http://www.bsigroup.com.

**Copyright**



BSI Group
Headquarters 389
Chiswick High Road,
London, W4 4AL, UK
Tel +44 (0)20 8996 9001
Fax +44 (0)20 8996 7001
www.bsigroup.com/
standards